Space Weather Forecast

Issued on Thursday, 09 March 2023 at 12:48 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares (R1-R2/Minor-Moderate radio blackouts) likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate through the past 24 hours with one Moderate class flare, which originated from a region in the southeast quadrant. This is now the largest and most magnetically complex region on the disc. The remaining eight numbered regions, and three new regions currently emerging on the east limb, are all relatively simple and weak, and mostly stable or showing slight growth. A coronal mass ejection (CME) was observed lifting off the northwest late on 8th March, although looks to be far-sided and is not considered to have any Earth-directed component.

No Earth directed Coronal Mass Ejections (CMEs) were observed in available imagery during the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind remained at slightly elevated levels, generally 410-480 km/s. The total Interplanetary Magnetic Field was weak to moderate, with the north-south component also varying weak to moderate, due to passing of a weak CME early on day 1 (09 March). Geomagnetic activity was Quiet to Unsettled (Kp 1 to 3), with an Active interval observed between 09/0600-0900 UTC due to weak CME passing influence.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with a slight chance of Strong activity. During the forecast period active new or returning regions are expected to rotate onto the visible disc from the far side.

Solar Wind / Geomagnetic Activity: Earth is experiencing slightly elevated solar wind speeds under the waning influence of a coronal hole fast wind. The fast wind is expected to continue to decline through the period to background levels, although slightly elevated winds may be be prolonged by a small coronal hole which could influence Earth today or tomorrow.
Geomagnetic activity is expected to be Quiet to Unsettled throughout the period, with a chance of Active intervals today or tomorrow.

Energetic Particles / Solar Radiation: Solar radiation levels are most likely to stay at background levels, but with a slight chance of reaching the S1/Minor Storm threshold or greater should any larger flares occur.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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